



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/541,049	02/13/2006	Nicola Da Dalt	1435.128.101/12928US	4105
25781 7590 04/21/2008 DICKE, BILLIG & CZAJA FIFTH STREET TOWERS 100 SOUTH FIFTH STREET, SUITE 2250 MINNEAPOLIS, MN 55402				
EXAMINER				
GANNON, LEVI				
ART UNIT		PAPER NUMBER		
2817				
MAIL DATE		DELIVERY MODE		
04/21/2008		PAPER		

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/541,049

Applicant(s)

DA DALT, NICOLA

Examiner

LEVI GANNON

Art Unit

2817

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 26 February 2008.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 17-19, 22-25, 29-31 and 40 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 17-19, 22-25, 29-31 and 40 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 29 June 2005 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 1/18/08 has been entered.

Drawings

The drawings are objected to because the label of the vertical axis of both graphs in figure 8B reads "fOUT/4" but it is the Examiner's belief that the labels should read -- fOUT/6 -- in order to coincide with the value of the first frequency divider (7) in figure 7. Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for

consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Response to Arguments

Applicant's arguments, see page 10, filed 1/18/08, with respect to the rejection of claim 18 have been fully considered and are persuasive. The rejection of claim 18 has been withdrawn. However, upon further consideration, a new ground(s) of rejection is made in view of Miller, as noted below.

Applicant's arguments filed 1/18/08 have been fully considered but they are not persuasive.

Regarding Applicant's comments directed to the rejection of claims 17 and 29 under 35 U.S.C. 102 (b) over Duff, Applicant states "*This passage [page 3, lines 22-27] of the Duff GB Patent explicitly recommends employing a high switching frequency in switching between the normal condition and the add pulse condition and therefore teaches away from the control device being configured to drive the oscillator such that the at least two generated output frequencies are alternated at an average frequency that is less than the at least two possible output frequencies, such as recited in*

independent claim 17 and from alternating the at least two generated output frequencies at an average frequency that is less than the at least two different output frequencies as recited in independent claim 29." note page 9 of the response filed 1/18/08.

This argument is not persuasive because, as noted in the Advisory Action mailed 1/29/08, the rapid switching disclosed on page 3, lines 22-27 of Duff is not noted as being relative to the output frequency of the circuit. Duff teaches that the switching may be done for "any desired period of time" (page 2, lines 104-110).

Applicant also notes that Duff does not teach the added limitation of claims 24 and 40. This argument is not persuasive because it is unclear how the frequency divider causes the certain time period to be extended. Note rejection of claims 24 and 40 under 35 U.S.C. 112, second paragraph, below.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 24 and 40 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claims 24 and 40 recite the following limitation "... *a frequency divider connected to the output of the oscillator and configured to cause the certain time period to be extended.*" It is unclear how the frequency divider causes the certain time period to be extended. The Applicant points to figures 8A-8C to show the extending of the certain

time period. Particularly, the Applicant states that figures 8B and 8C show the time period being extended. However, it appears that the time period that the output wave is analyzed is arbitrary and not necessarily relevant when determining the average frequency of the wave shown in figure 8A-8C. For example figure 8A shows the output wave being displayed for 25ns while figure 8B show the output wave being displayed for 350ns. However, if one were to calculate the average frequency of the wave in figure 8B, the average frequency would be the same whether the "certain time period" was taken as 350ns or for the same 25ns as is done in figure 8A.

It is unclear how the frequency divider of the instant application is used "... *to cause the certain time period to be extended.*"

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 17, 19, 22, 25, 29, and 31 are rejected under 35 U.S.C. 102(b) as being anticipated by Duff (GB 2 002 157; reference of record).

Regarding claim 17, Duff discloses a device (figure 2) for frequency synthesis comprising: an oscillator (11,30) driven for generating, at a frequency out of a set of at least two possible output frequencies (frequencies can be: frequency found at "IN" node, a divided frequency from 1 lb, or zero), an output signal (OUT); and a control

device (20) for driving the oscillator (11,30), wherein the control device, for the purpose of generating a desired frequency that is not included in the set of possible output frequencies (by providing an average frequency), is configured to drive the oscillator to alternately generate at least two different output frequencies (frequencies can be: frequency found at "IN" node, a divided frequency from 1 lb, or zero), out of the set of possible output frequencies, such that an average value of the generated output frequencies over a certain time period is substantially the desired frequency (note abstract), wherein the control device is configured to drive the oscillator such that the at least two generated output frequencies are alternated at an average frequency that is less than the at least two possible output frequencies (Switches 35/37, and 36/37 can be switched at any desired speed, specification page 2, lines 104-110.).

As for claim 19, Duff teaches the control device (20) being configured to drive the oscillator such that the at least two generated output frequencies are alternated at an average frequency that is greater than the reciprocal value of the certain time period. (Switches 35/37 and 36/37 can be switched at any desired speed, specification page 2, lines 104-110.)

In terms of claims 22 and 25, Duff teaches the oscillator comprising a digitally controlled oscillator. Switching device part of oscillator (11, 30) contains digital devices 35-37.

Regarding claims 29 and 31, the methods as recited in the claims are inherently present in the structure as discussed above in the rejections of claims 17 and 19.

Claims 17 and 23 are rejected under 35 U.S.C. 102(b) as being anticipated by Hirotoni (European Patent Application 0 430 493; reference of record).

As for claim 17, Hirotoni discloses a device (figure 7) for frequency synthesis comprising: an oscillator (inside dotted line box) driven for generating, at a frequency out of a set of at least two possible output frequencies (by adjusting current provided to delay stages seen in figure 7), an output signal; and a control device (701/702 and transistor providing current) for driving the oscillator, wherein the control device, for the purpose of generating a desired frequency that is not included in the set of possible output frequencies (note column 1, lines 5-10), is configured to drive the oscillator to alternately generate at least two different output frequencies, out of the set of possible output frequencies, such that an average value of the generated output frequencies over a certain time period is substantially the desired frequency (Adjusting the current fed to the oscillator through the transistor is adjusted by adjusting the variable resistors 701 and 702. The output frequency of the oscillator is then changed by way of a varying control current.), wherein the control device is configured to drive the oscillator such that the at least two generated output frequencies are alternated at an average frequency that is less than the at least two possible output frequencies (The resistors 701 and 702 may be adjusted at any frequency relative to the output frequency of the oscillator.).

As for claim 23, Hirotoni teaches the oscillator comprises a ring oscillator (note ring oscillator in figure 7), wherein a current (from transistor shown), out of a set of possible currents (provided by changing values of resistors 701 and 702), can be

supplied to the ring oscillator for the purpose of driving the ring oscillator (current inherently is driving the ring oscillator of Hirotoni).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 18 and 30 are rejected under 35 U.S.C. 103(a) as being unpatentable over Duff in view of Kamas et al (hereinafter "Kamas") (US Patent 6,429,799).

In terms of claim 18, Duff teaches the control device (20) operating in an analog to digital conversion principle but fails to teach the control device driving the oscillator with a bit stream generated according to a delta-sigma-principle.

Kamas teaches the delta sigma principle being a well known form of analog to digital conversion. Note column 1, lines 61-63.

It would have been obvious to one of ordinary skill in the art to drive the oscillator with a control device according to the delta sigma principle because such a modification would have been an addition of a well known analog to digital conversion circuit.

Regarding claim 30, the method as recited in the claim is inherently present in the structure as discussed above in the rejection of claim 18.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to LEVI GANNON whose telephone number is (571)272-7971. The examiner can normally be reached on Monday-Friday 9:30AM-6:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Robert Pascal can be reached on (571) 272-1769. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

LG
04/16/08

/Robert Pascal/
Supervisory Patent Examiner, Art Unit 2817